Crystalline Frameworks Materials
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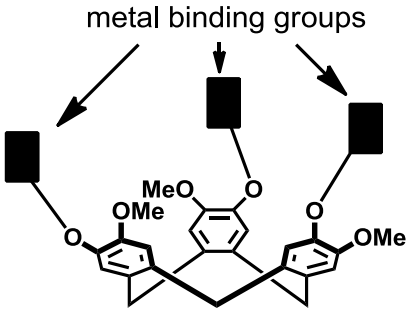
We are seeking to build crystalline materials form the self-assembly of metal cations and multifunctional ligands

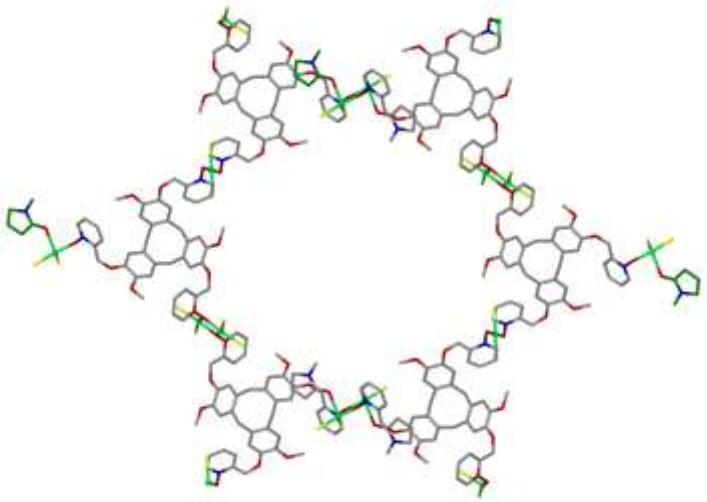
- incorporate molecular host fragments for molecular recognition
- robust, porous materials
- develop different applications through post-synthetic modifications

Our work includes:

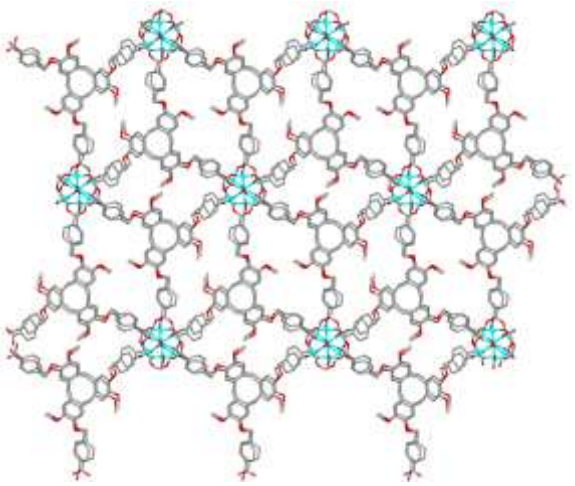
- organic ligand design and synthesis
- synthesis of coordination polymers/metal-organic frameworks
- single crystal X-ray diffraction
- materials characterisation

Design 1: Molecular hosts as tectons

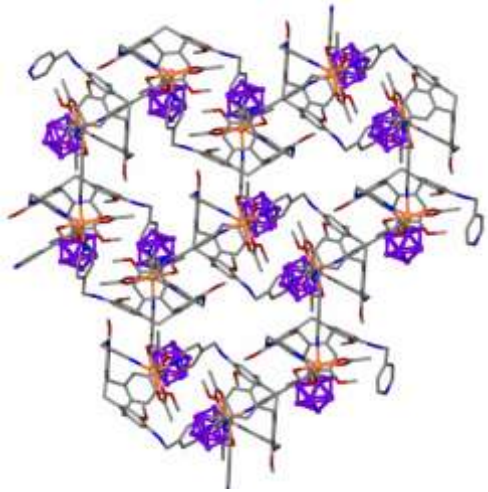




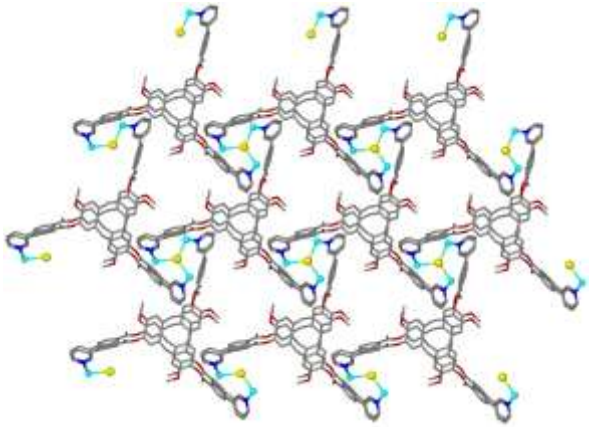
• 3-connected 6^3 net



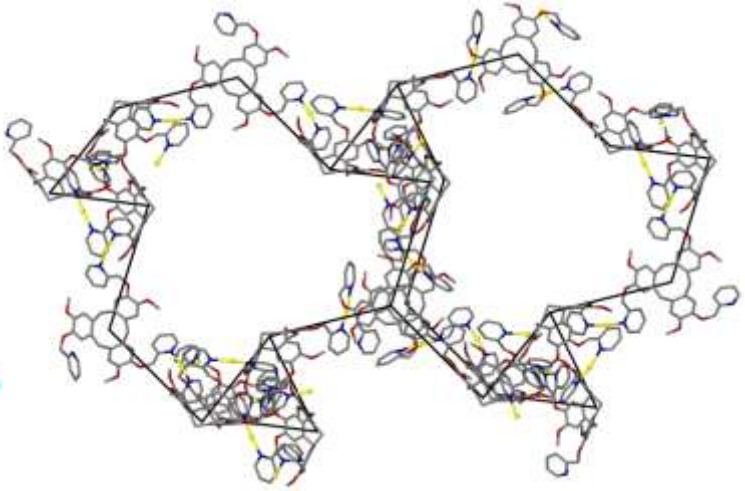
• 3,6-connected net



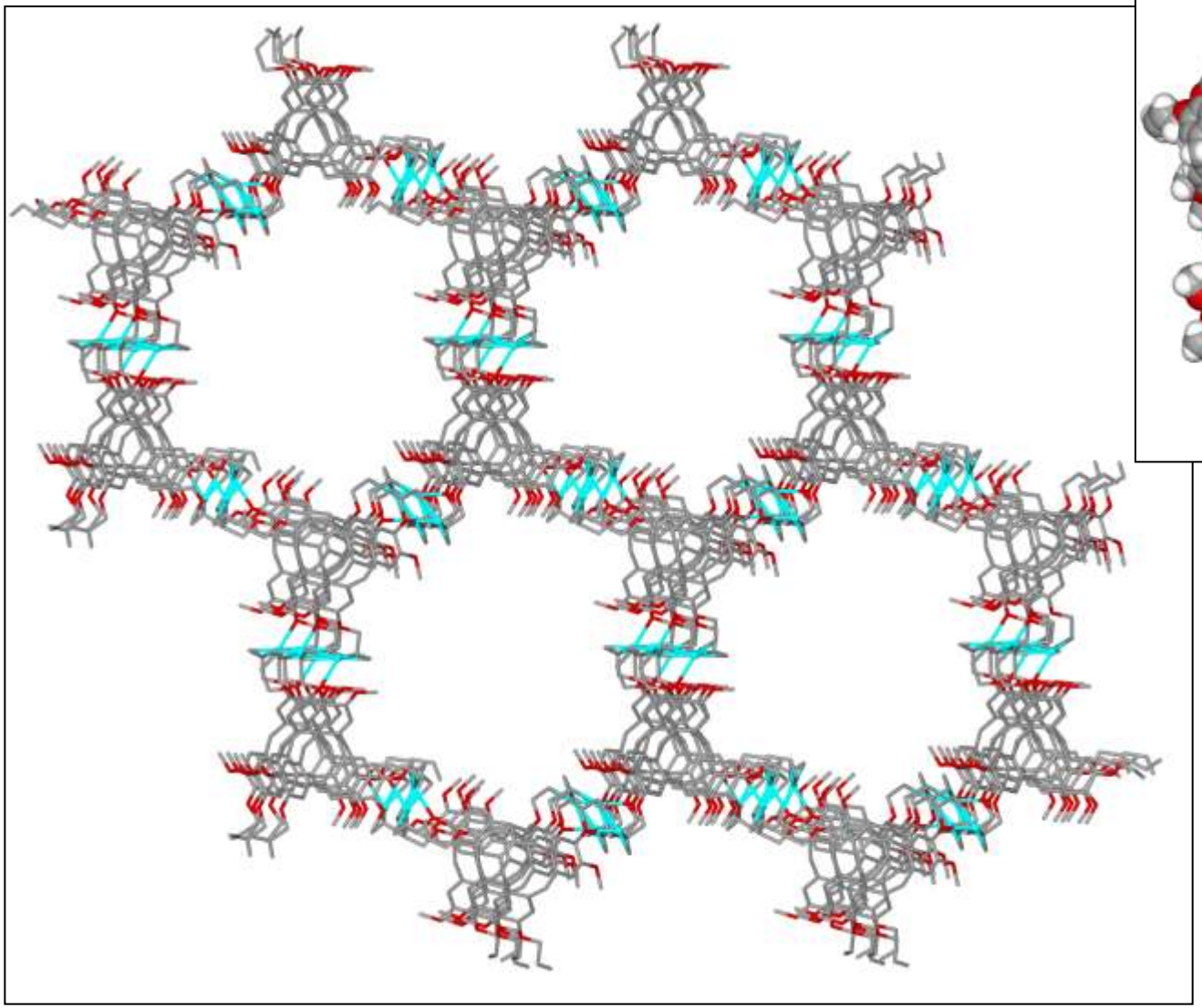
• 3-connected 4.8^2 net

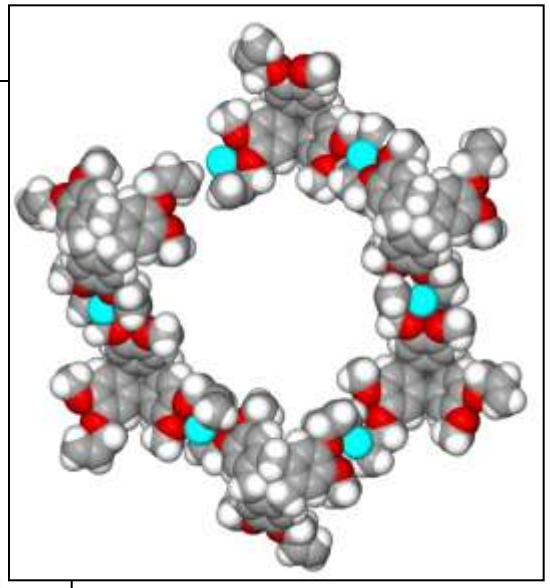


• 2D net of linked cages



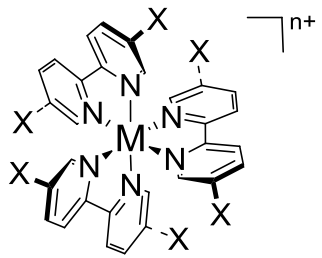
• 3-connected (10,3)-a net

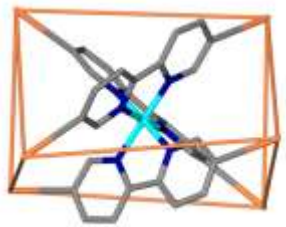




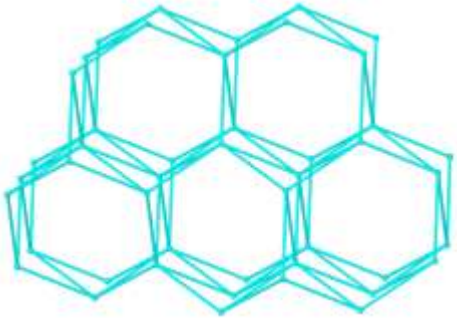
- 3-D network with hexagonal arrangement of uni-directional channels
- Chiral structure with helices
- Robust, porous structure

Design 2: Chelating ligands as tectons

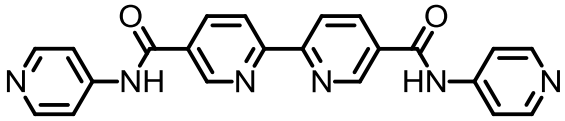




Linear link

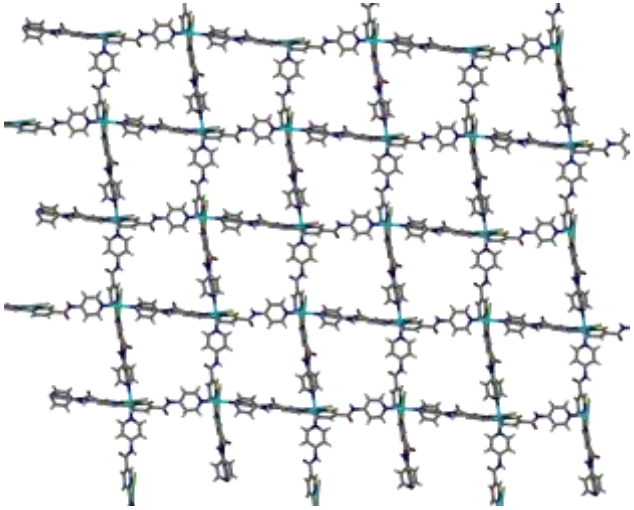


$4^9 6^6$ topology

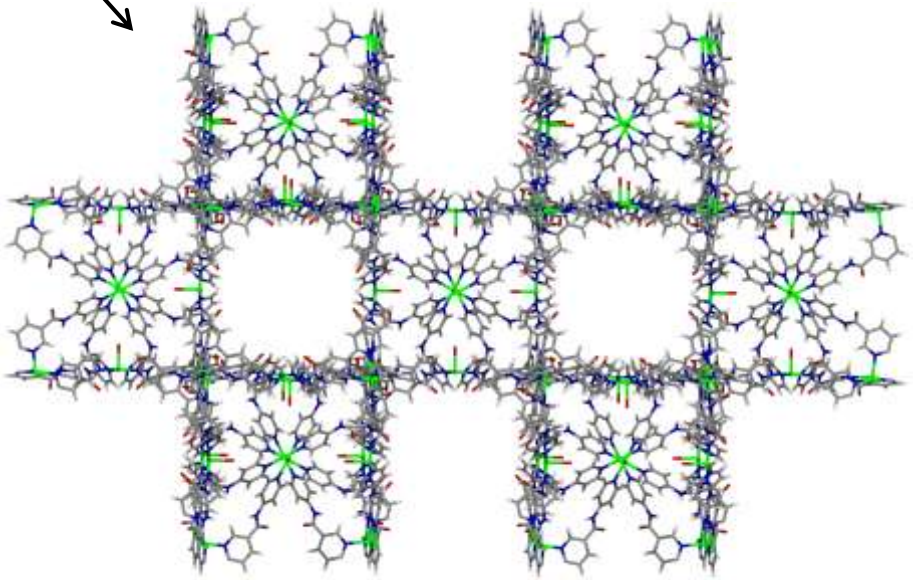


$CoCl_2.6H_2O$

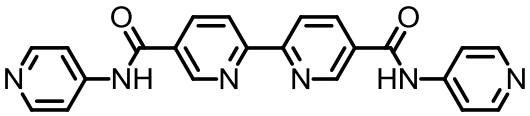
$Cu(NO_3)_2.6H_2O$



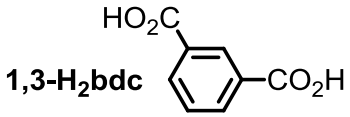
4^4



$\{4^4 \cdot 6^2\}_3\{4^6 \cdot 8^9\}_2$

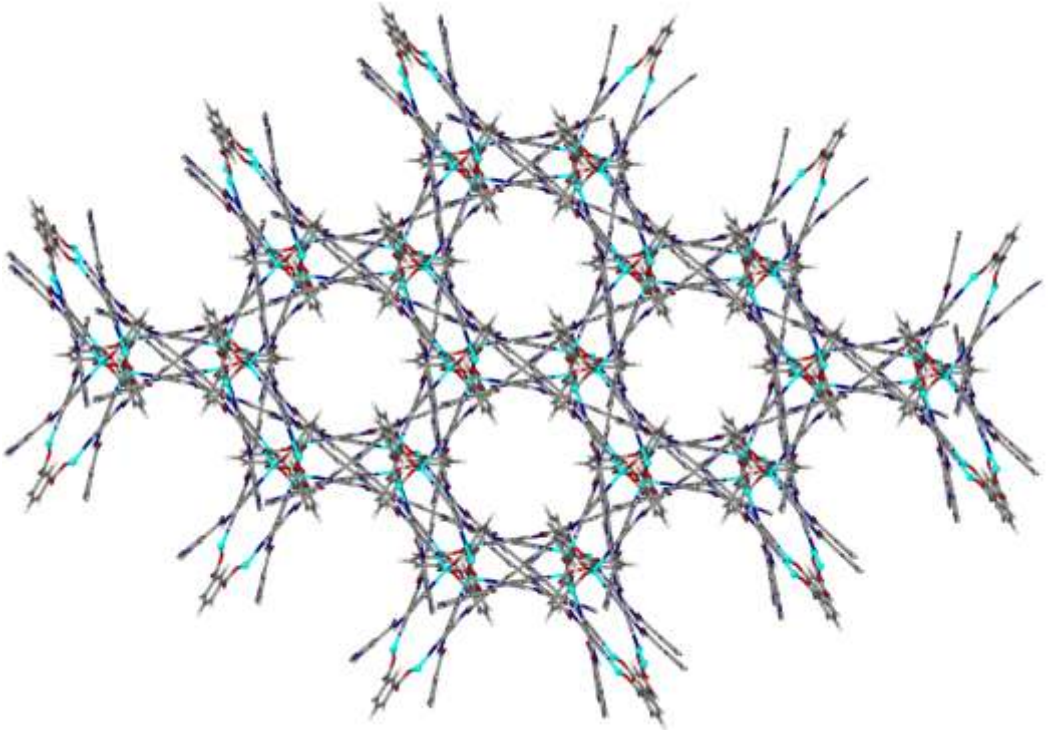


5,5'-dipybpy

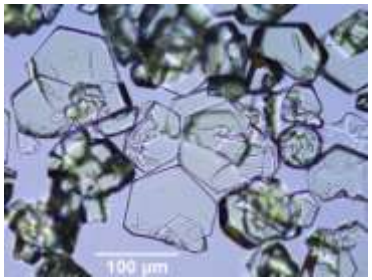


1,3-H_2bdc

$Zn(NO_3)_2$



self-catenating $\{8^5.10\}$ topology



$CuCl_2$